Math Virtual Learning

Grade 7
Surface Area of Pyramids

May 14, 2020

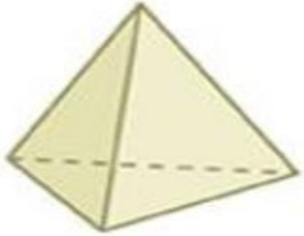
Grade 7/Surface Area of Pyramids
Lesson: May 14, 2020

Objective/Learning Target:
Find the surface area of pyramids.

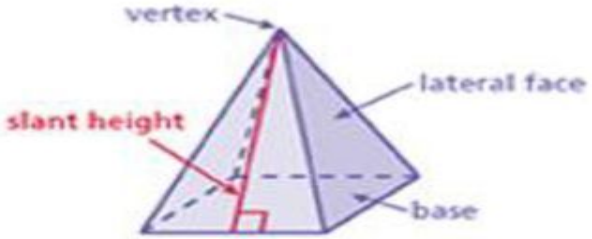
Let's Get Started:
Watch Video: Surface Area of a Pyramid

Pyramids

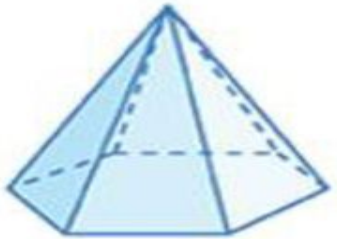
- Pyramids are named from their base shape
- Most pyramids we've seen are square pyramids but there are plenty of others as well…



Triangular Base



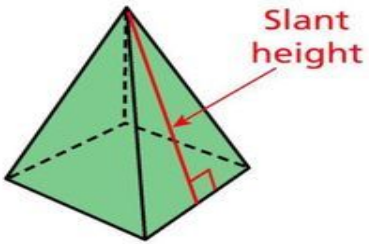
Square Base



Hexagonal Base

Parts of a pyramid

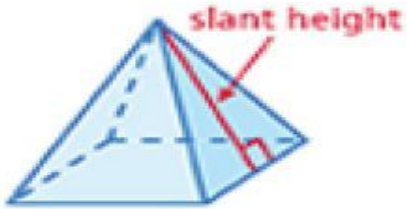
- A regular pyramid is a pyramid whose base is a regular **polygon** (all sides equal). The lateral faces are **triangles.**
- The height of each triangle is the ***slant height*** of the pyramid.

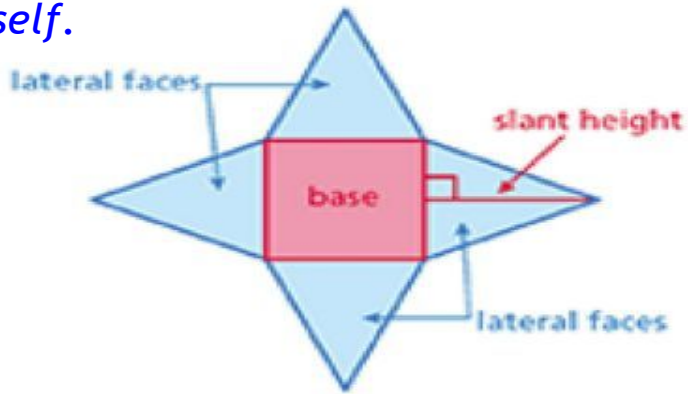


Here is one way to find the surface area.

Another look

To find the base area, just square the base side length. In other words, multiply it by itself.

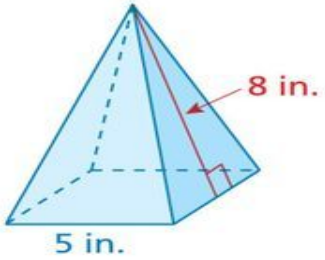




Surface Area of Pyramid =

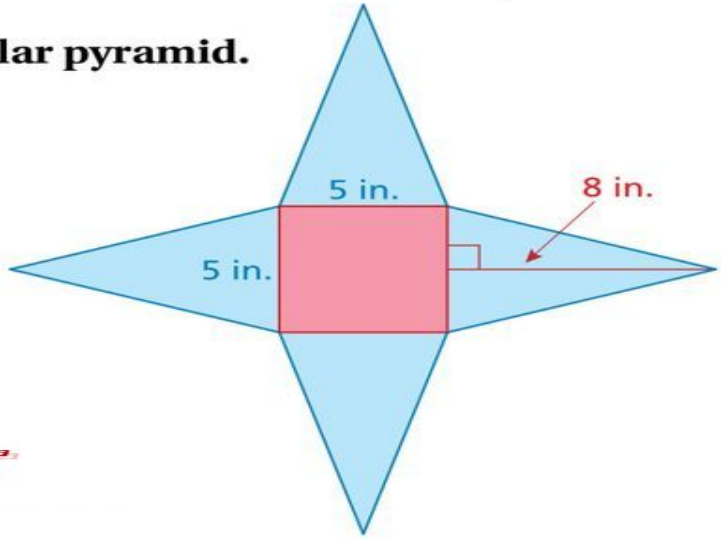
Area of Base + Areas of Lateral Faces

Example 1A: Finding Surface Area using a net



Find the surface area of the regular pyramid.

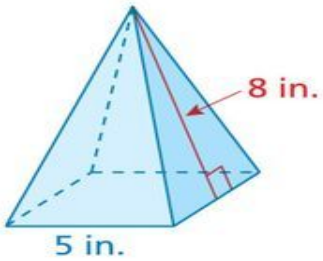
Remember, to find the area of the base, just square the base side length. In other words, multiply it by itself.



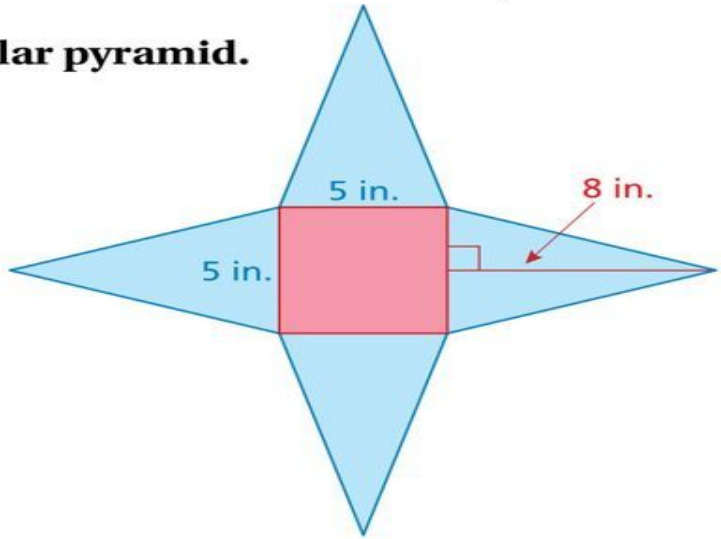
answer

There are 4 identical lateral faces. Count the area 4 times.

Example 1A: Finding Surface Area using a net



Find the surface area of the regular pyramid.



Triangle Faces

½ b x h = area

½(5) x 8 = area

2½ X 8 = area

20 = area of one triangle

20 x 4 = area of four triangles

80 = **area of four triangles**

There are 4 identical lateral faces. Count the area 4 times.

Rectangle Face

l x w = area

5 x 5 = area

25 = area of one rectangle

Add All Faces

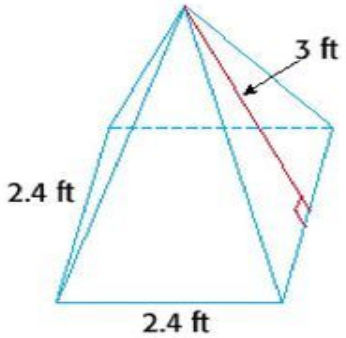
80 + 25 = surface area

105 in^2 = surface area of the pyramid

Example 1B: Find the Surface Area of a Pyramid

Find the surface area of the figure.

answer



Example 1B: Find the Surface Area of a Pyramid

Find the surface area of the figure.

Surface Area

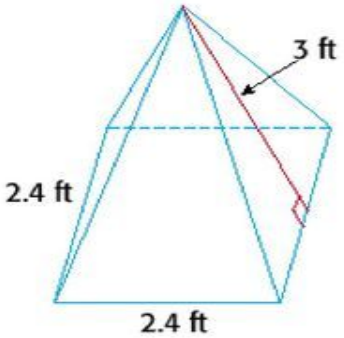
Area of the base + 4 x Area of lateral face = surface area

2.4 x 2.4 + 4(½ x 3 x 2.4) = surface area

5.76 + 4(3.6) = surface area

5.76 + 14.4 = surface area

20.16 ft^2 = surface area



You Try!

- What is the surface area of a square pyramid with a base side length of 9 cm and a slant height of 7 cm? (Draw a picture, then solve)

To find the area of the base, just square the base side length. In other words, multiply it by itself.

answer

You Try!

- What is the surface area of a square pyramid with a base side length of 9 cm and a slant height of 7 cm? (Draw a picture, then solve)

<u>Surface Area</u>

Area of the base + 4 x Area of lateral faces = surface area

9 x 9 + 4 (½ x 9 x 7)

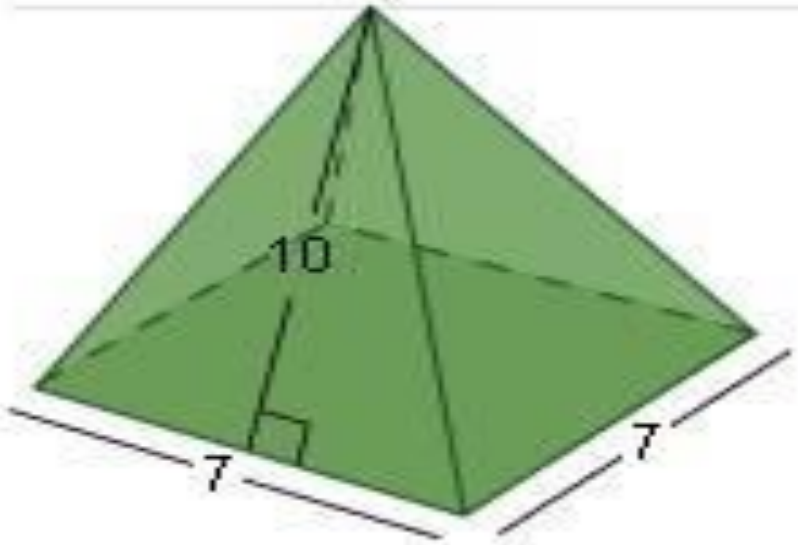
81 + 4(31.5) = surface area

81 + 126 = surface area

207 cm^2 = area of one triangle

207 cm^2

You Try!



- A. 140 units^2
- B. 189 units^2
- C. 280 units^2
- D. 329 units^2

You Try!

<u>Surface Area</u>

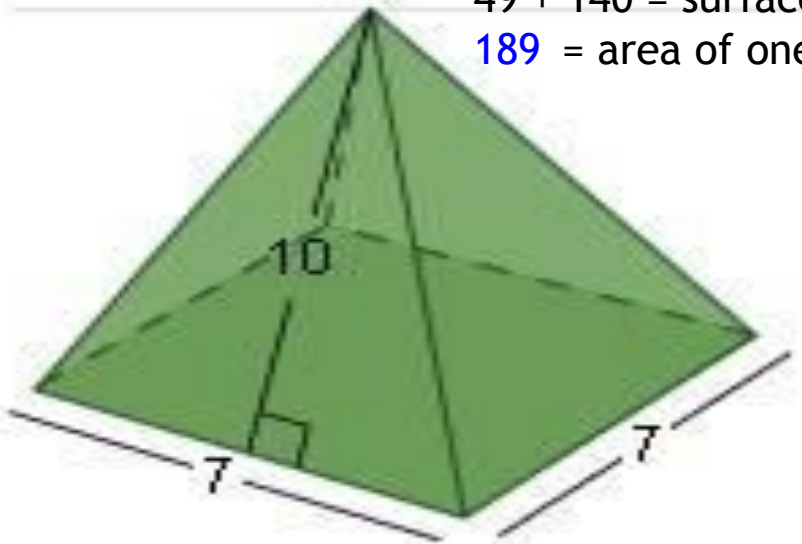
Area of base + 4(Area of lateral faces = surface area

7 x 7 + 4(½ x 7 x 10) = surface area

49 + 4(35) = surface area

49 + 140 = surface area

189 = area of one triangle



- ○ A. 140 units^2
- ✓ B. 189 units^2 (Correct)
- ○ C. 280 units^2
- ○ D. 329 units^2

Additional Practice:

Click on the links below to get additional practice and to check your understanding!

Khan Academy - (Practice using nets, like on slide 7)

IXL - Practice

IXL - Challenge